CLAIMS

What is claimed is:

1. Apparatus for dispensing a substance, comprising:

a dispensing controller (332); and

a dispenser (330) operated by said dispensing controller (332) for dispensing a substance at times determined by said dispensing controller (332);

characterized by said dispenser (330) and said dispensing controller (332) being themselves injectable into an animal/human.

2. Apparatus according to claim 1 wherein said dispenser (330) provides continuous application of said substance to said animal/human.

3. Apparatus according to claim 1 wherein said dispenser (330) provides discontinuous application of said substance to said animal/human.

4. Apparatus according to claim 1 further comprising a supply of a substance in communication with said dispenser.

5. Apparatus according to claim 1 further comprising a biological sensor (169) which senses biological information of said animal/human and provides an input related to the information to said dispensing controller (158, 332).

6. Apparatus for dispensing substances to animals comprising:

an dispensing controller (352); and

a dispenser (350) operated by said dispensing controller (352) for dispensing a substance to an animal at times determined by said dispensing controller (352);

characterized by said dispenser (350) comprising a Micro-Electro-Mechanics Systems (MEMS) pump (354).

7. A dispensing assembly comprising:

an dispensing controller (158); and

a dispenser operated by said dispensing controller (158) for dispensing a substance at times determined by said dispensing controller (158),

and wherein said dispenser comprises:

at least one discrete container cell (270, 282) containing said substance; and

release apparatus, responsive to said dispensing controller (158), for selectably releasing said substance from said at least one container cell (270, 282) in a desired timed pattern, determined by said dispensing controller (158);

characterized by said release apparatus comprising an energizing element connected to said at least one cell (270, 282), said energizing element producing an electrical current which flows to an enclosure material of said at least one cell (270, 282), wherein said electrical current itself makes a portion of the enclosure material permeable for passage therethrough of said substance.

8. The dispensing assembly according to claim 7 wherein the electrical current electrically heats the portion of the enclosure material of said at least one cell (270, 282).

9. The dispensing assembly according to claim 7 wherein the electrical current melts the portion of the enclosure material of said at least one cell (270, 282).

10. The dispensing assembly according to claim 7 wherein the electrical current disintegrates the portion of the enclosure material of said at least one cell (270, 282).

11. The dispensing assembly according to claim 7 wherein an electrical wire (272) is attached to said enclosure material of said at least one cell (270, 282).

12. The dispensing assembly according to claim 7 wherein an electrical wire (272) is disposed through said at least one cell (270, 282).

13. The dispensing assembly according to claim 7 wherein the electrical current passes through said enclosure material.

14. The dispensing assembly according to claim 7 wherein the electrical current changes a material property of said enclosure material such that said enclosure material becomes permeable for passage therethrough of said substance

15. The dispensing assembly according to claim 13 wherein said substance acts as an electrical resistance element.

16. The dispensing assembly according to claim 7 further characterized by said release apparatus comprising *i* columns of a plurality of such energizing elements (272) arranged to contact bottom surfaces of said cells (270) and *j* rows of a plurality of such energizing elements (272) arranged to contact top surfaces of said cells (270).

17. A dispensing assembly (280) comprising:

an dispensing controller; and

a dispenser operated by said dispensing controller for dispensing a substance (284) at times determined by said dispensing controller,

and wherein said dispenser comprises:

at least one container cell (282) containing said substance (284); and

release apparatus, responsive to said dispensing controller, for selectably releasing said substance (284) from said at least one cell (282) in a desired timed pattern, determined by said dispensing controller;

characterized by further comprising a needle (294) in fluid communication with said at least one cell (282), wherein upon actuation of said release apparatus, said substance (284) is brought in fluid communication with said needle (294).

18. The assembly (280) according to claim 17 wherein upon actuation of said release apparatus, a force of said substance (284) exiting said cell propels said needle (294) in a generally linear direction.

19. The assembly (280) according to claim 17 wherein said dispenser provides continuous application of said substance (284).

20. The assembly (280) according to claim 17 wherein said dispenser provides discontinuous application of said substance (284).

21. The assembly (280) according to claim 17 wherein said substance (284) is vacuum-packed in said discrete container cells (282).

22. The assembly (280) according to claim 17 further comprising a manifold (292) in fluid communication with said cells (282).

23. A dispensing assembly (280) comprising:

an dispensing controller; and

a dispenser operated by said dispensing controller for dispensing a substance (284) at times determined by said dispensing controller,

and wherein said dispenser comprises:

a plurality of discrete container cells (282), each containing said substance (284); and

release apparatus, responsive to said dispensing controller, for selectably releasing said substance (284) from individual ones of said container cells (282) in a desired timed pattern, determined by said dispensing controller;

characterized in that the release apparatus of one of said cells (282) acts as a switch to switch electricity to the release apparatus of a subsequent cell (282).

24. The dispensing assembly (280) according to claim 23 wherein said release apparatus itself serves as a feedback for proper operation of the release apparatus.

25. A dispensing assembly (280) comprising:

an dispensing controller; and

a dispenser operated by said dispensing controller for dispensing a substance (284) at times determined by said dispensing controller,

and wherein said dispenser comprises:

a plurality of discrete container cells (282), each containing said substance (284); and

release apparatus, responsive to said dispensing controller, for selectably releasing said substance (284) from individual ones of said container cells (282) in a desired timed pattern, determined by said dispensing controller;

characterized in that said dispensing controller operates the release apparatus of said cells (282) with an input to an electrical contact (400), wherein subsequent activations of the same said input to the same said electrical contact (400) subsequently activate the release apparatus of subsequent cells (282).

26. The dispensing assembly (280) according to claim 25 wherein said release apparatus itself serves as a feedback for proper operation of the release apparatus.

27. A dispensing assembly (280) comprising:

an dispensing controller; and

a dispenser operated by said dispensing controller for dispensing a substance (284) at times determined by said dispensing controller,

and wherein said dispenser comprises:

a plurality of discrete container cells (282), each containing said substance (284); and

release apparatus, responsive to said dispensing controller, for selectably releasing said substance (284) from individual ones of said container cells (282) in a desired timed pattern, determined by said dispensing controller;

characterized in that each said discrete container cell (282) comprises a propelling device, which upon actuation of said release apparatus, propels said substance (284) out of said cell (282), wherein said propelling device comprises a membrane (283) initially in tension, and wherein the membrane (283) of a previous cell (282) acts as a switch to switch electricity to enable rupturing of a subsequent cell (282).

28. The dispensing assembly (280) according to claim 27 and further comprising a manifold (292) in fluid communication with said cells (282).

29. The dispensing assembly (280) according to claim 27 further comprising feedback circuitry which senses movement of the membrane (283) to regulate operation of the release apparatus.

30. Release apparatus comprising:

an energizing element connected to at least one discrete container cell (270, 282) containing a substance, said energizing element producing an electrical current which flows to an enclosure material of said at least one said cell (270, 282), wherein said electrical current itself makes a portion of the enclosure material permeable for passage therethrough of said substance.

31. Release apparatus according to claim 30 further comprising *i* columns of a plurality of such energizing elements (272) arranged to contact bottom surfaces of said cells (270) and *j* rows of a plurality of such energizing elements (272) arranged to contact top surfaces of said cells (270).